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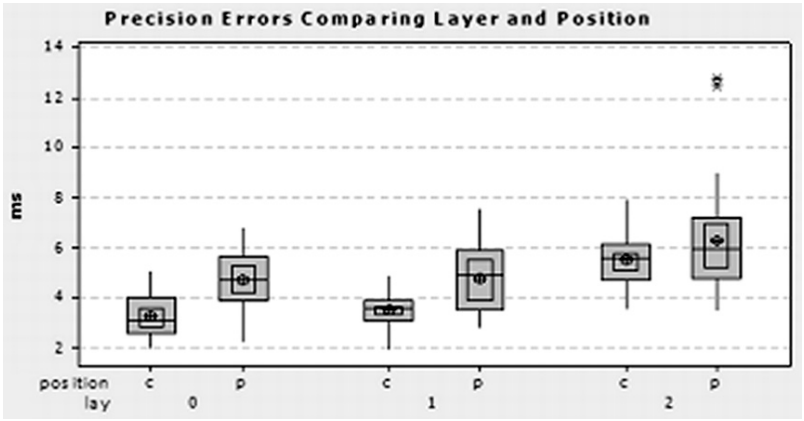

errors between 1.5 Tesla or 3 Tesla at constant spatial resolution. However, different relative reproducibility errors were found between the cartilage layers.
Conclusions: The precision errors were reasonably small as compared to the reported (up to 180%) change from healthy to diseased cartilage in the literature suggesting a good discriminatory power of the technique. Our data give a first estimate of global and regional reproducibility errors of T2 in healthy human patellar cartilage, may serve as a base for sample size calculations and may contribute to plan the study design in both longitudinal and cross-sectional trials in OA.

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SENSITIVITY TO CHANGE OF VARIOUS RADIOGRAPHIC SCALES IN HAND OA, INCLUDING MODIFIED KALLMAN AND VERBRUGGEN SCORES

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Purpose: Hand osteoarthritis (0A) could be a relevant model to study OA progression in structure-modification trials. Various methods are proposed to radiologically assess hand OA and its progression. The Kallman and Verbruggen scores have shown good inter- and intra-observer precisions in a previous work. However, these scores could be simplified to be used in structure-modification trials. **Objective:** To study the sensitivity to change of Kallman, Vergbruggen and modified Kallman and Verbruggen radiological scoring methods proposed to assess hand OA.
Methods: Two trained readers scored separately 105 pairs of radiographs (baseline; year 1), selected from patients enrolled in a randomised controlled trial, for inter-reader reliability and sensitivity to change. They scored twice 60 pairs among the 105 for cross-sectional and longitudinal intra-reader reliability. Radiological hand OA assessment used were: Kallman; Verbruggen scoring methods and modified Kallman (each of the 6 items composing the score were studied and osteophyte and joint space narrowing assessments coupled) and Verbruggen scores (without scoring the metacarpo-phanlangeal (MCP) joints). The sensitivity to change was compared by calculating the standardised response means (SRM).
Results: SRMs ranged as indicated in Table 1.
Conclusions: All methods compared well with respect to sensitivity to change. However, the Verbruggen score doesn't not loose any sensitivity when scored without the MCPs, and scoring only osteophytes and joint space narrowing does not alter the sensitivity of the originally proposed Kallman grading scale. The Kallman and its modification (osteophyte + joint space assessment) were slightly more sentitive to change. Erosions could be also, separately scored as they assess a particular stage of hand OA progression.

Table 1. SRM of radiological scoring methods

SRM	Reader 1	Reader 2
Kallman Total	0.22	0.26
Osteophyte + Joint space narrowing	0.23	0.23
Joint space narrowing	0.17	0.23
Sclerosis	0.09	0.20
Subchondral cysts	0.14	0.06
Lateral deviation	-0.04	-0.09
Osteophyte	0.21	0.12
Erosions	0.23	0.27
Verbruggen Total PIP-DIP without MCPs	0.200.20	0.230.23

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REPRODUCIBILITY OF MORPHOLOGICAL, RELAXOMETRY AND GEOMETRICAL CHARACTERIZATION OF THE HIP JOINT WITH MAGNETIC RESONANCE IMAGING

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Purpose: Morphological characteristics derived from MRI such as cartilage thickness and volume, as well as relaxometry parameters such as T2 and T1-rho have demonstrated their potential to characterize OA of the knee. After the knee, the hip joint is the most affected by OA, and accurate and precise quantitative assessment of hip cartilage based on MRI may contribute to the early detection of cartilage abnormalities which is important to evaluate the progression of the disease and related treatments. Accuracy of the morphological and relaxometry techniques has been previously reported, however no values for T2 of hip cartilage have been published. Thus, the objective of this work was twofold: 1. To test the feasibility of in vivo T2 measurements of hip cartilage. 2. To quantify the reproducibility of in vivo measurements derived from MRI of the hip cartilage: thickness, volume, T2, and T1-rho; as well as the size of the femoral head, which is referred as an important geometrical index.
Methods: Sagittal MR images of the hip joint of 5 asymptomatic volunteers were obtained at 3 T using a bilateral dual-phased array coil. Subjects were placed supine in the scanner, the coil was secured to the hip joint, and the feet were positioned in adduction (45 degrees). Images included a 3D water excitation SPGR (WE-SPGR; ~10 min) sequence with spatial resolution